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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/926,608	03/08/2002	Mats Leijon	216272US	6438

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OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.
1940 DUKE STREET
ALEXANDRIA, VA 22314

EXAMINER

MULLINS, BURTON S

ART UNIT PAPER NUMBER

2834

DATE MAILED: 04/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/926,608

Applicant(s)

LEIJON ET AL.

Examiner

Burton S. Mullins

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 35-71 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 35,37-39,46-57,62-66 and 68-70 is/are rejected.
- 7) ☒ Claim(s) 36,40-45,58-61,67 and 71 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Suspension

1. Pursuant to the Board of Appeal's final decision regarding U.S. Application No. 08/973,019, suspension has been lifted. As set forth in the decision on petition requesting suspension, the instant application was granted a suspension pending the decision on appeal of the '019 application. On November 27, 2002, the Board affirmed the rejection of the '019 application and on August 27, 2003, the Board denied applicant's request for reconsideration, thus terminating prosecution of the '019 application. An action on the merits follows.

Information Disclosure Statement

2. The information disclosure statements submitted on May 10, 2002 and October 21, 2002 have been considered by the examiner.

Claim Rejections - 35 USC § 112

3. Claims 65-66 and 70 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Recitations “with an ideal characteristic over rotational speed as a function of wind speed” and “by comparison of a measured transmitted active power with an ideal characteristic over rotational speed as a function of power” in vague and indefinite. It is not clear if this is meant to be a comparison of power with an ideal characteristic, or if the comparison is between power and a ratio including the characteristic. The similar recitation in claim 70 is also vague and indefinite.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 35 37-39 46-48, 62-66, 68-70 are rejected under 35 U.S.C. 103(a) as being unpatentable over Patrick (US 4,161,658) in view of Spirk (US 4,367,890). Patrick teaches a wind power plant comprising a wind power station having a wind turbine (with blades 10; Fig.1) and an AC generator 26; and an electric alternating voltage connection between the wind power station and at least one of an external transmission network and an external distribution network (c.5, lines 3-7). Patrick further teaches a frequency converter 30 for matching the generator's frequency and phase to that of the grid's (c.5, lines 16-23), i.e., the converter 30 "convert[s] the frequency of the electric alternating voltage connection to match the network frequency."

However, Patrick's converter is not "configured to fix a station frequency substantially below a network frequency of at least one of the external transmission network and the external distribution network."

Spirk teaches a turbine 3 coupled to a generator 11 feeding a constant frequency network 15 (Fig.2). The turbo speed is adjusted via a frequency controlled direct converter 13 (Fig.2). Since the direct converter has a low generator-side frequency, the nominal generator

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frequency (20 Hz) is fixed substantially lower than the network frequency (50 Hz). See c.3, lines 19-25. Spirk's direct converter eliminates control of turbine speed through costly mechanical adjustment of the rotor blades and instead provides more efficient electrical speed regulation (c.1, lines 67-c.2, line 2). Further, since the direct converter enables generator operation at low frequency, current losses are lower and the generator may be designed with a higher utilization coefficient (c.2, lines 9-29).

It would have been obvious to modify Patrick and provide a direct converter per Spirk to fix the generator frequency lower than the network frequency, since this would have eliminated mechanical control of the generator and replaced it with electrical control, thereby reducing generator current losses, improving the utilization coefficient.

Regarding claim 46, Patrick teaches plural, parallel-connected turbines (c.16, line 47-49).

Regarding claim 47, the generator of Spirk may be asynchronous (c.2, lines 30-32).

Regarding claim 48, note gearbox 20 in Patrick.

Regarding claim 62, the network of Patrick and Spirk inherently comprise aerial lines. Patrick specifically discloses power transmission lines (c.5, line 6).

Regarding claim 63, Spirk's converter inherently controls frequency "at the electrical alternating voltage connection".

Regarding claims 64-66 and 69-70, as best understood, Patrick teaches a wind speed sensor 78 and active power measuring unit (control 46, Fig.11) employed in a closed-loop feedback system with the converter. The generator power and speed control schedules serve as means for measuring power with an ideal.

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6. Claim 49 is rejected under 35 U.S.C. 103(a) as being unpatentable over Patrick and Spirk as applied to claim 48 above, and further in view of Gervasio et al. (US 4,513,206).

Neither Patrick nor Spirk teach a planetary gear mechanism.

Gervasio teaches a wind-powered generator 2 having a planetary gearing 3 so that power may be generated more uniformly (c.1, lines 33-35).

It would have been obvious to modify Patrick and Spirk and provide a planetary gear per Gervasio since this would have provided more uniform power generation.

7. Claims 50-57 and 72 are rejected under 35 U.S.C. 103(a) as being unpatentable over Patrick and Spirk and further in view of Elton et al. (US 4,853,565). Patrick and Spirk do not teach details of the generator winding.

Elton teaches a flexible electrical cable suitable for dynamo electric machines comprising an internal grading layer of semi-conducting pyrolyzed glass fiber layer in electrical contact with the cable conductor. Elton's electrical conductor comprises a solid insulation layer 106 between two semi-conducting pyrolyzed glass fibers 104, 110, the internal grading layer 104 surrounding the conductors of cable 100. In another embodiment, Elton teaches an electrical cable provided with an exterior layer of internal grading layer of semi-conducting pyrolyzed glass fiber layer in contact with an exterior cable insulator with a predetermined reference potential.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have used a cable winding similar to the one taught by Elton et al. in the generator of Patrick and Spirk since this would have been desirable to prohibit the

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development of corona discharge and would equalize the electrical charge generated between two layers.

Allowable Subject Matter

8. Claims 36, 40-45, 58-61, 67 and 71 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claim 36, neither Patrick nor Spirk teach a converter with means to vary the voltage of the electric alternating voltage connection.

Regarding claim 40, the prior art, in particular Patrick and Spirk, do not teach a frequency converter comprising a dc voltage intermediate link having an AC/DC converter, and an inverter with an ac voltage side and a dc voltage side.

Regarding claim 45, Fig.2 of Spirk shows series connected diodes, but not insulated gate bipolar transistors, per se.

Regarding claims 58-60, the prior art, in particular Patrick and Spirk, do not teach a step-down transformer which steps-down the voltage between the generator and converter.

Regarding claims 67 and 71, the prior art, in particular Patrick and Spirk, do not teach constant ratio of voltage to frequency at the electrical alternating voltage connection over a major part of a frequency range.

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Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Burton S. Mullins whose telephone number is 571-272-2029.

The examiner can normally be reached on Monday-Friday, 9 am to 5 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor Ramirez can be reached on 571-272-2034. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Burton S. Mullins
Primary Examiner
Art Unit 2834

bsm
March 26, 2004